

# Sand and Gravel Removal and Stream Health: A Landowner's Guide

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Sand and gravel can be good or bad news for Missouri landowners. Some use it to pave farm roads; others curse it for causing stream channel problems. However, we haven't always had large amounts of sand and gravel in many of our streams. Over the last century deep pools, stable stream banks and narrow stream channels slowly changed to shallow, wide, eroding streams; the "old swimming hole" was often buried under a mound of sand and gravel. Through it all, landowners tried to deal with these changes, many of which have caused problems.

## What Caused Sand and Gravel Problems?

Much of the sand and gravel in Missouri streams came from changes that occurred on the Missouri landscape over a century ago. History reveals that dramatic watershed changes began to occur in the 1800's as large tracts of Ozark hardwood timber were harvested for lumber and railroad ties. In northern and western Missouri, prairie sod was plowed to feed a growing nation.

Farming efforts that followed these changes were characterized by poor soil conservation and left the ground unprotected. Burning, plowing and overgrazing of hillsides removed vegetation which held soils in place. Trees along stream banks were frequently cleared for more farmland. As these trees were removed, roots which formerly held stream banks in place decayed. Stream banks eroded faster and channel changes occurred more rapidly. Sand and gravel washed into Missouri streams.

## What Can Landowners Do?

Today, we are still facing problems that began over a century ago. As landowners, you must work with unstable streams that erode stream banks and deposit sand and gravel on fields and other undesirable places during floods. Some actions landowners can take to save their valuable soil and farmlands are:

**Practice good soil conservation.** Good soil conservation not only keeps topsoil on agricultural fields where it belongs, but it also keeps it from being washed into streams and adding to the sand and gravel already there. Sound conservation plans should be developed and implemented for all your agricultural lands. Areas not used for agriculture should also demonstrate good soil conservation management. Consult your local Soil and Water Conservation District or the Soil Conservation Service for information and assistance in soil conservation planning.

**Use stream bank stabilization structures.** Excess gravel can cause stream bank erosion problems. Eroding stream banks should be fixed using approved stabilization structures. Dozing and packing sand and gravel on stream banks is not a good solution to stream bank erosion and can cause problems for downstream neighbors. Pushing loose sand and gravel against a stream bank makes these materials susceptible to being carried by flood waters and dropped where they are not wanted. While not all stream bank erosion problems are easily solved, Missouri Department of Conservation Fisheries personnel can assist you with many common stream bank erosion problems.



**Maintain timbered buffer strips along streams.** A strip of trees is necessary to filter sand and gravel and keep it from being dumped on bottomland fields. Streamside trees keep banks stable and, by slowing flood waters, cause sand and gravel carried by flood waters to drop out in this buffer strip rather than on bottomland fields. Consult your local Missouri Department of Conservation Forestry office for advice and information on planting and managing streamside trees.

**Remove sand and gravel carefully.** When done properly, sand and gravel can be removed with minimal harm to the stream and can allow you to use some of this material on your farm. However, removal does not address the causes of sand and gravel problems in the stream. It is important to remember that sand and gravel removal can create physical and economic problems for landowners above and below the removal area. If a removal technique is chosen, it should be conducted with the stream's stability in mind. You should consider the following steps to ensure minimal impacts to others and avoid damaging streams:



Restrict removal activities to sand and gravel bars that are loosely packed to avoid damage to the stream. Bars covered with larger-sized materials that are well packed or vegetated are usually stable and should not be disturbed. Missouri Department of Conservation, Fisheries Division personnel can help you find locations where gravel removal will minimize harm to the stream.

Remove gravel above the water line and leave a 2 foot buffer of undisturbed material between the normal water line and the excavation area.

Avoid removing sand and gravel within 25 feet of streamside vegetation. Vegetation holds gravel and soil, keeping bars and banks in place.

Use approved stream bank erosion structures and avoid channel straightening or packing sand and gravel on eroding stream banks.

When you finish, smooth the removal area to avoid stream bed erosion and other stream channel problems.

Avoid using vehicles and heavy equipment in the water. If you must cross the stream, drive vehicles at right angles to stream flow.

Sand and gravel removal should take place before March 15 and after June 15 to avoid harming spawning fish and their habitat.

Keep fuel, oil and other wastes out of the stream.

Do not remove gravel from riffles (shoals) because they prevent erosion of the stream bed. Riffles are very important to stream stability and are a major source of food and oxygen for aquatic life.

Do not wash sand or gravel in the stream channel to avoid polluting the water with sediment. If you must wash sand or gravel, use a settling basin and wash your material outside the stream.

Apply for the appropriate permits. Most stream work, including the above guidelines, requires permits from state and federal agencies. Be sure you comply with all applicable laws. Contact Missouri Department of Conservation Fisheries offices for assistance in applying for these permits.



The "Streams for the Future" program makes it possible for every Missourian to help protect our streams and rivers. For more information, write:

**STREAMS FOR THE FUTURE  
FISHERIES DIVISION  
MISSOURI DEPARTMENT OF CONSERVATION  
BOX 180  
JEFFERSON CITY, MO 65102  
573/751-4115**

The health of Missouri streams depends on you, the landowner. Remember that sand and gravel removal can cause stream problems. Please follow these guidelines when sand or gravel removal is necessary. If you would like advice with your gravel removal decisions, contact your nearest Fisheries Division office or any Missouri Department of Conservation employee for the location of the Fisheries office near you.

Compiled and designed by: Sherry Fischer

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